



Audit Report

OFFICE OF THE INSPECTOR GENERAL

HOTLINE ALLEGATIONS
FOR THE HOVER INFRARED SUPPRESSION SYSTEM
FOR THE UH-60 BLACK HAWK HELICOPTER

Report Number 91-117

September 6, 1991

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Department of Defense

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INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202-2884

September 6, 1991

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR ACQUISITION
ASSISTANT SECRETARY OF THE ARMY (FINANCIAL
MANAGEMENT)

SUBJECT: Report on the Audit of the Hotline Allegations for
the Hover Infrared Suppression System for the UH-60
Black Hawk Helicopter (Report No. 91-117)

We are providing this final report for your information and use. Comments on a draft of this report were considered in preparing the final report. We performed the audit from December 1990 through March 1991 in response to a DoD Hotline complaint.

The Hover Infrared Suppression System core kits for the Black Hawk helicopter were not competitively procured. As a result, the Army lost the opportunity to realize about \$18.3 million in savings and could lose about \$7.5 million in future savings on the remaining suppression system core kits needed for the balance of the Black Hawk helicopter fleet.

DoD Directive 7650.3 requires that all audit recommendations be resolved promptly. Therefore, the Assistant Secretary of the Army (Financial Management), must provide final comments on the unresolved recommendations by November 6, 1991. Also, we requested that the Under Secretary of Defense for Acquisition consider the additional information and provide comments to our final report.

The courtesies extended to the audit staff are appreciated. If you have any questions on this audit, please contact Mr. Thomas F. Gimble at (703) 614-1414 (DSN 224-1414) or Mr. Thomas Corkhill at (703) 614-1416 (DSN 224-1416). Copies of this report are being provided to the activities listed in Appendix E.

Robert J. Lieberman
Assistant Inspector General
for Auditing

Enclosure

cc:
Secretary of the Army

Office of the Inspector General

AUDIT REPORT NO. 91-117
(Project No. OAL-0083)

September 6, 1991

HOTLINE ALLEGATIONS FOR THE HOVER INFRARED SUPPRESSION
SYSTEM FOR THE UH-60 BLACK HAWK HELICOPTER

EXECUTIVE SUMMARY

Introduction. The UH-60 Black Hawk helicopter is the primary combat support helicopter used by the Army. The Hover Infrared Suppression System is integral to the survival of the Black Hawk helicopter in the modern battlefield environment. The Hover Infrared Suppression System was developed between 1981 and 1984 and was implemented in 1985. In March 1990, the DoD Hotline forwarded a complaint concerning the propriety of contracting procedures to the Assistant Inspector General for Auditing for review. The complaint alleged that the Hover Infrared Suppression System was not being competitively procured, as prescribed by the Competition in Contracting Act of 1984, and that suppression systems were not installed on the majority of the UH-60 Black Hawk helicopters in the Army fleet.

Objectives. The audit objectives were to evaluate the reasonableness of suppression system hardware requirements, the timeliness of installing the suppression systems on Army Black Hawk helicopters, and the adequacy of compliance with the Competition in Contracting Act of 1984 regarding the suppression system procurement. Also, our objectives included an evaluation of the validity of statements contained in the Hotline complaint and a determination of whether the allegations warranted further management attention.

Audit Results. The Hover Infrared Suppression System core kits were not competitively procured. As a result, the Army has lost the opportunity to realize about \$18.3 million in savings and could lose about \$7.5 million in future savings on the remaining suppression system core kits needed for the balance of the Black Hawk helicopter fleet.

Internal Controls. We identified a material internal control weakness regarding the Army Aviation Systems Command's Competition Advocacy and Spares Management Office's failure to develop a competitive technical data package to enable competitive procurement of the suppressor core kits. A description of the controls assessed is on page 2.

Potential Benefits of Audit. The principal benefits that will be realized from the audit are compliance with the Competition in Contracting Act of 1984 and DoD Directive 4245.9 and monetary benefits of \$7.5 million from reduced procurement costs. These monetary benefits are discussed in Appendix D.

Summary of Recommendations. We recommended immediate development of a competitive technical data package and competitive procurements of the suppressor core kits. We also recommended management action to preclude recurrence of the inappropriate use of other than full and open competitive practices in the future.

Management Comments. The Army nonconcurred with the recommendations. We requested that the Army provide additional comments by November 6, 1991. The Under Secretary of Defense for Acquisition also responded, reserving judgement pending clarification on the first recommendation, and generally concurring with the second recommendation. The complete texts of the comments are in Part IV of the report.

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This report was prepared by the Acquisition Management Directorate, Office of the Assistant Inspector General for Auditing, DoD. Copies of the report can be obtained from the Information Officer, Audit Planning and Technical Support Directorate, (703) 693-0340 (DSN 223-0340).

PART I - INTRODUCTION

Background

The Hover Infrared Suppression System is a defensive countermeasures system that is integral to the survival of the UH-60 Black Hawk helicopter in the modern battlefield environment. The suppression system increases the aircraft's survivability by reducing the opportunity for an infrared seeking threat system to acquire, lock onto, track, and destroy the helicopter. The suppression system reduces heated exhaust emissions by recirculating hot engine exhaust gases within the suppressor core and mixing the heated gases with ambient air before discharging the exhaust into the atmosphere.

Procurement history. The UH-60 Black Hawk helicopter was initially equipped with the Cruise Suppression System, but the Army determined that the Cruise Suppression System did not function effectively when the helicopter was hovering. As a result, the Hover Infrared Suppression System was developed between 1981 and 1984 and was implemented in 1985 to replace the Cruise Suppression System. The Hover Infrared Suppression System is made up of fixed components, including adapters and brackets, that are integral to the helicopter airframe, and removable components, including the suppressor core. The suppressor core is manufactured by General Electric Aircraft Engine Company, Lynn, Massachusetts.

Hotline complaint. The DoD Hotline forwarded a complaint concerning the propriety of contracting procedures to the Assistant Inspector General for Auditing for review. The complaint alleged that the Hover Infrared Suppression System was not being competitively procured, as prescribed by the Competition in Contracting Act of 1984, and that suppression systems were not installed on most of the Army's UH-60 Black Hawk helicopters.

Objectives

The audit objectives were to:

- o evaluate the adequacy and sufficiency of the acquisition strategy and contracting procedures for the Hover Infrared Suppression System,

- o determine the validity of statements contained in the Hotline complaint,
- o determine whether either of the allegations warranted further management attention,
- o assess the reasonableness of suppression system hardware requirements,
- o assess the timeliness of installing the suppression systems on Army Black Hawk helicopters, and
- o assess the adequacy of the Army's compliance with the Competition in Contracting Act of 1984 regarding the suppression system procurement.

We substantiated the allegation concerning the contracting improprieties for the suppressor core kits. The results of our review of this allegation are discussed in Part II of this report. We determined that additional audit work was not warranted on the determination of system requirements and the timeliness of the installation of the suppression systems. The results of our review of these two allegations are summarized in Appendix A.

Scope

This economy and efficiency audit was performed from December 1990 through March 1991 and included a review of records and supporting information dating primarily from February 1982 through March 1991. We interviewed cognizant Government and contractor personnel involved in the management, acquisition, and manufacture of the Hover Infrared Suppression System. The audit was made in accordance with auditing standards issued by the Comptroller General of the United States as implemented by the Inspector General, DoD, and accordingly included such tests of internal controls as were deemed necessary. The audit was performed at the Army Aviation Systems Command, St. Louis, Missouri, and the General Electric Aircraft Engine Company, Lynn, Massachusetts.

Internal Controls

Controls assessed. We evaluated the internal controls related to the management and acquisition of the Hover Infrared Suppression System. In assessing the internal controls, we evaluated internal control techniques, such as management plans, written policies and procedures, and management initiated reviews.

Results of assessment. The audit identified a material internal control weakness as defined by Public Law 97-255, Office of Management and Budget Circular A-123, and DoD Directive 5010.38. Controls were not effective to ensure that the provisions of the Competition in Contracting Act of 1984 and DoD Directive 4245.9 "Competitive Acquisition," August 17, 1984, were implemented. Recommendation 2. in this report, if implemented, will correct the weakness. We have determined that monetary benefits will not be realized by implementing Recommendation 2. A copy of this report will be provided to the senior official responsible for internal controls within the Army.

Prior Audits and Other Reviews

There have not been any prior audits of the Hover Infrared Suppression system in the last 5 years.

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PART II - FINDING AND RECOMMENDATIONS

Noncompetitive Acquisition of Suppression Core Kits

The Hover Infrared Suppression System's core kits were not competitively procured, as prescribed by the Competition in Contracting Act of 1984 and DoD Directive 4245.9 "Competitive Acquisition," August 17, 1984. This occurred because the Army did not take timely action to develop a competitive technical data package. As a result, the Army has lost the opportunity to realize about \$18.3 million in savings and could lose about \$7.5 million in savings on the remaining suppression system core kits needed for the balance of the Black Hawk helicopter fleet.

DISCUSSION OF DETAILS

Background

Requirements for establishing competition. Competitive acquisition must begin in the early stages of a system's life cycle. It is DoD policy that goods and services be competitively acquired to the maximum extent practicable as a means of achieving economic, technical, schedule, and supportability benefits. According to DoD Directive 4245.9, the program manager and command officials are responsible for developing contract requirements and initiating action to develop and support a competitive acquisition strategy. Further, the Directive requires that the senior command procurement executive review any decisions that result in the procurement of production units without competition. These controls were established to minimize any factors that may adversely influence consideration of reasonable competitive alternatives to proposed noncompetitive actions. Federal Acquisition Regulation, subpart 6.502(b), states that the procuring activity's competition advocate shall promote full and open competition in the procuring activity and challenge barriers to such competition.

Procurement history. From 1985 to 1988, production contracts for Hover Infrared Suppression System core kits have been awarded to United Technologies Corporation, Sikorsky Aircraft Division, and subcontracted to General Electric. In 1988, the Army broke out the core kits from Sikorsky, procured the kits directly from General Electric, and provided the kits to Sikorsky as Government Furnished Material. A summary of the contracting actions for the suppressor core kits is in Appendix B.

Sole Source Justification

Since the Hover Infrared Suppression System core kits were broken out in 1988, the Army has negotiated three sole source contracts with General Electric. The accompanying justifications for other than full and open competition consistently cited the nonavailability of a competitive technical data package as the principal obstacle to initiating a competitive procurement. The justifications also stated that a competitive technical data package would be developed when a new source was granted approval. However, the absence of a technical data package precluded the qualification of any additional approved sources.

Attempts to become an approved source. The Army received responses from seven contractors interested in competing for the fabrication of the core kits as a result of a March 22, 1988, Army synopsis in the Commerce Business Daily, but the contractors could not submit cost proposals because a technical data package did not exist. In April 1988, Hayes Targets, Leeds, Alabama, responded to the synopsis requesting the opportunity to compete for production of the Hover Infrared Suppression System core kits. In August 1989, Hayes submitted a second request to compete for the suppression system procurement. In its 1989 request, Hayes indicated that the Army had not yet responded to the April 1988 request, but that during 1988, Hayes had initiated an inquiry to the Army Aviation Systems Command's procurement office and learned that the suppressor core drawings were available for review.

On January 12, 1990, Hayes sent a third request to the Army Aviation Systems Command Competition Advocacy and Spares Management Office in an attempt to become an established competitor. The letter stated, "Hayes Targets is confident from the review of data made to date that the fabrication of the UH-60 Hover Infrared Suppression System is well within their capability and would like the opportunity to compete on any future buys that the Army may have." However, the Army still took no action to develop a competitive technical data package or qualify Hayes Targets as an approved source. A June 1990 internal Competition Advocate's Office memorandum stated, "There has been a muddle of confusion over I. R. Suppressors over the past year with regard to what branch should handle them. This has resulted in no action being taken on the UH-60 HIRSS and a lost window of opportunity for up-front competition."

The June 1990 memorandum further instructed a staff member of the Competition Advocate's Office to perform a cost-benefit study of

core kit procurements to determine whether it was feasible, in fact, to compete the core kits. Also, the memorandum requested that the same staff member write a letter answering the 1988 Hayes letter when the analysis was complete. The memorandum made no reference to the Army Aviation Systems Command's Directorate for Systems and Cost Analysis November 1989 cost benefit study, which supported the feasibility, as well as the cost-effectiveness, of initiating competitive procurement for the suppressor core kits.

Recommendation for competition. The Black Hawk project management office was aware that competition for the suppressor core kits would be cost-effective. In November 1989, the Army Aviation Systems Command's Directorate for Systems and Cost Analysis completed a cost-benefit study at the Black Hawk project manager's request. The study concluded that a competitive acquisition for the suppression system core kits would be cost-effective. The analysis stated, ". . . significant cost savings may be realized from breakout of the HIRSS. Therefore, the recommendation is to consider 'full and open' competition of the HIRSS core." The Black Hawk project management office never acted on this recommendation, and a technical data package was not developed. We were unable to determine if the results of the cost-benefit study were ever communicated beyond the project management office. The project management office ignored the recommendation in the subsequent sole source procurements.

Technical Data Packages

The Army's continuing delay in developing a competitive technical data package has been an insurmountable barrier to competition. The Army had procured the data necessary to develop a technical data package in September 1984, when the first sole source contract was awarded for the suppressor core kits.

Procurement of production drawings. In June 1984, a Government contract price analyst reviewed the March 9, 1984, General Electric proposal letter 84-RBJ-136, which provided for the Hover Infrared Suppression System production (level III) drawings. In the report, the Navy Plant Representative Office, Lynn, Case No. 840562, the analyst observed, ". . .as a result of the six developmental sets, a design and engineering drawings do exist. . . .the task remaining is to change engineering drawings to production drawings and incorporate the design changes." On September 28, 1984, the proposal for the production drawings was incorporated into modification P00164 to contract DAAJ09-82-C-A326.

DoDIG request for technical drawing information. In a February 1991 response to our inquiry requesting technical drawing information, the Army Aviation Systems Command Procurement Office stated that the Army had only procured level II technical drawings for the Hover Infrared Suppression system. We determined that the Army actually had procured the level III drawings in September 1984 and could have initiated development of a competitive technical data package when the production drawings were contractually deliverable. However, it was apparent from the procurement office's response to our inquiry that the Army was unaware that it had procured the production drawings for the suppressor core.

Contractor provides technical drawings. In August 1989, the Army Aviation Systems Command Competition Advocacy and Spares Management Office and the Black Hawk project management office did obtain the technical drawings. General Electric provided the Army with the necessary data to enable the Army to develop a competitive technical data package for the Hover Infrared Suppression System. However, the data obtained from General Electric were not used to develop a competitive technical data package. The drawings were forwarded to the Competition Advocate's office where they were allegedly lost. The September 1989 justification for other than full and open competition stated:

Due to the lack of data in the Government's possession to develop a TDP no other contractor can currently provide the kit especially in the time frame required. Neither have any other contractors to date shown any interest in becoming qualified to provide the kits.

The May 1990 justification cited similar constraints. The accuracy of the foregoing justifications was not supported by the facts we reviewed. The Army possessed the technical data and could have prepared a competitive technical data package. Seven contractors did express an interest in becoming qualified sources. In fact, repeated requests from Hayes went unanswered for 2 years. At the time of the audit, no action had been taken to develop a technical data package from the drawings obtained in 1989 or procured in 1984. Although the Competition Advocacy and Spares Management Office maintained the technical drawings were incomplete, during the audit we obtained a complete set of the technical drawings from the records repository. When we notified the Competition Advocate's office and the Black Hawk project

management office that we had obtained a complete set of drawings, the focus of the resistance to competition shifted to special tooling, and we were told it was no longer cost-effective to establish competition. In our opinion, the Black Hawk project management office never intended to establish a competitive acquisition for the core kits.

Design Maturity

We visited the General Electric facilities in February 1991 to determine the design maturity of the suppression system, the nature and scope of the fabrication process, and the accuracy and completeness of the drawings obtained by the Army in 1989. The General Electric engineers informed us that the suppressor design was stable, that the drawings were complete and suitable for the development of a technical data package, and that another contractor could successfully fabricate the suppressor core from the drawings supplied to the Army in 1989. The engineers further informed us that there were no special processes pertaining to the General Electric fabrication of the Hover Infrared Suppression System core.

Cost Savings

At the time of audit, the Army had procured 952 suppressor core kits at a total cost of \$57.4 million. If the core kits had been competitively procured in 1985, the competitive cost of the 952 core kits would have been \$39.1 million. As a result, the Army lost the opportunity to save about \$18.3 million because it did not compete the core kits. Future sole source procurements will cost about \$29.9 million for the remaining 507 core kits. If the 507 core kits were competitively procured, the total costs would decrease to about \$22.4 million. The Army could lose as much as \$7.5 million unless action is immediately taken to establish competition for the remaining core kits required to fulfill the Army's approved quantity. Our computation of potential future savings excluded replenishment spares and quantities to support the requirements of the other Services. Our analysis of the incremental costs incurred and the potential for future cost savings is in Appendix C. Our savings computation is based on the midrange 25-percent projection of expected savings computations in the November 1989 cost-benefit study completed by the Army Aviation Systems Command's Directorate for Systems and Cost Analysis. We believe our estimate is conservative, and the projected savings are achievable.

Conclusion

Competition was not established consistent with the requirements of the Competition in Contracting Act of 1984 and DoD Directive 4245.9. The Army had several opportunities to establish competition for the Hover Infrared Suppression System for the 1984 production contract, but it did not do so. The Army has incurred \$18.3 million in unnecessary costs as a result of its failure to establish competition for the suppressor core at the earliest opportunity. Competitive procurement of the remaining suppressor core kits would result in about \$7.5 million in future savings to the Army.

RECOMMENDATIONS, MANAGEMENT COMMENTS, AND AUDIT RESPONSE

We recommend that the Commander, Army Aviation Systems Command:

1. Develop a competitive technical data package and use full and open competition for the remaining procurements of the Hover Infrared Suppression System core kits.

Under Secretary of Defense for Acquisition comments. The Office of the Under Secretary neither concurred nor nonconcurred with the recommendation pending review of the Army's reply and clarification of facts described in the report. The full text of the Under Secretary's comments is in Part IV of the report.

Audit response. In 1984, Army procured the level III technical drawings for the Hover Infrared Suppression System core kits in contract DAAJ09-82-C-A326. The technical drawings were again provided by General Electric at no cost to the Army in 1989, but they were misplaced by the Army. According to a General Electric representative, the Army made no further requests for additional drawings. The Competition Advocacy and Spares Management Office provided conflicting information concerning the availability of the 1989 drawings. Although the automated drawing inventory system indicated that drawings were missing, a physical check of the records repository to verify the drawings was never performed. The Army had ample opportunity to develop a technical data package for the core kits, and chose not to. We request that the Under Secretary of Defense for Acquisition consider the additional information and provide comments to our final report.

Army comments. The Assistant Secretary of the Army (Research, Development and Acquisition) nonconcurred with the recommendation stating that all the technical data were not available and even if they were, full and open competition would not be cost-effective given the remaining quantities, tooling costs, and production delays involved. The full text of the Assistant Secretary's comments and the detailed audit response are in Part IV of the report.

Audit response. The Army's comments are not consistent with the facts. We remain convinced that the Army violated the intent and the spirit of the Competition in Contracting Act of 1984 and did not adhere to the procedures detailed in DoD Directive 4245.9 "Competitive Acquisition." Although the Hover Infrared Suppression System core kits were an ideal candidate for full and open competition, the Army never seriously attempted to establish competition for the kits.

The Army represented the tooling costs to be \$6 million and stated that the costs to establish a competitive source would result in another \$6 million investment. We disagree. The Army overstated the General Electric special tooling costs by \$1.9 million. As of July 1991, the Army had incurred \$4.1 million in special tooling costs to sustain a production rate of 30 core kits per month. We received indications from another contractor in July 1991 that the tooling costs could be as much as 50 percent lower than the \$4.1 million that the Army incurred for General Electric. The contractor indicated that the primary reasons for the reduced tooling costs were that some of the tooling was common to the industry and other tooling, such as the robotics technology employed by General Electric, was not essential.

Competitive acquisition of the Hover Infrared Suppression System would not adversely affect helicopter production. The 507 core kits discussed in the report have delivery dates beginning in FY 1994. The core kits are not integral to the production of the Black Hawk helicopter and are field installable. The Army took delivery of 749 helicopters from FY 1981 through FY 1985 without the Hover Infrared Suppression System installed.

If the core kits had been competed at the earliest opportunity, the savings would have been about \$18.3 million. The basis for the future savings is also valid. However, because of the uncertainties that the Black

Hawk program will proceed beyond the authorized level of 1,443 helicopters, we reduced the number of core kits in our savings projections from 1,317 to 507. Accordingly, the future monetary benefits were revised downward from \$19.4 million to \$7.5 million based on the approved program level. We could not estimate the additional long-term savings attributable to competitive acquisition of replenishment spares and core kit components which are used on other Service helicopters.

Our recommendation is valid, and if implemented, will result in a minimum savings of \$7.5 million to the Army. Additionally, the recommendation will establish a competitive base that will ensure that future acquisition costs for the core kits will remain stable over the life of the Black Hawk helicopter. We request that the Army reconsider its position and provide comments to the Recommendation and the revised potential monetary benefits of \$7.5 million to the final report.

2. Initiate management action to ensure that the provisions of the Competition in Contracting Act of 1984 and DoD Directive 4245.9 "Competitive Acquisition," are being implemented to preclude recurrence of the inappropriate use of other than full and open competitive procurement practices in the future.

Under Secretary of Defense for Acquisition comments. The Under Secretary of Defense for Acquisition concurred with the intent of the recommendation and suggested that it be revised to recommend that the Army take management action to preclude the use of other than full and open competition in the future. Also, the first sentence in the draft recommendation should more appropriately state using other than full and open competition rather than "sole source procurements."

Audit response. We agree with the Under Secretary of Defense's comments, and we have incorporated the revisions into this final report.

Army comments. The Assistant Secretary of the Army (Research, Development and Acquisition) nonconcurred with the recommendation stating that review processes are already in place to ensure that the provisions of DoD Directive 4245.9, are being implemented. In addition, the Office of the Competition Advocate reviews and approves all acquisitions greater than \$100,000 solicited on a less than full and open competition basis, and reviews all non spare/repair part requirements

certifications before release of purchase requests to the contracting officer. Finally, the Competition Advocate reviews a random sampling of all open contract files to ensure full compliance with the Competition in Contracting Act.

Audit response. We did not identify any deficiencies in the adequacy of the procedures governing compliance with DoD Directive 4245.9. However, we did take exception to the effectiveness of the implementation of those existing procedures. In the instances of the core kit procurements we reviewed, the procedures that should have caused competition to be established were repeatedly circumvented. Established internal controls must be followed to be effective. The justifications supporting the sole source core kit acquisitions were materially misstated in every case. Each justification was approved by the Competition Advocate, and the accuracy of each justification was endorsed by a senior Army Aviation Systems Command procurement executive. Yet, the validity of the information presented in the justifications went unverified and unchallenged. We request that the Army reconsider its position in response to the final report.

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PART III - ADDITIONAL INFORMATION

APPENDIX A - Audit Conclusions

APPENDIX B - Summary of Contracting Actions

APPENDIX C - Analysis of Competitive Savings

**APPENDIX D - Summary of Potential Monetary and Other Benefits
Resulting from Audit**

APPENDIX E - Report Distribution

APPENDIX A: AUDIT CONCLUSIONS

We determined that additional work was not warranted in determining the reasonableness of the system's requirements and the timeliness of installation of the suppression systems. A discussion of these areas follows.

Determination of system requirements. We reviewed various program management documents including the acquisition strategy for the Hover Infrared Suppression System to determine if the planned quantities were consistent with the Army's requirements. Past contracting quantities and future quantities are consistent with the overall quantities of core kits required to support production and initial spares provisioning for the UH-60 Black Hawk helicopter. We concluded that the quantities were appropriate, and no further audit work in this area was warranted.

Timeliness of installation. The Cruise Suppression System was originally installed on the UH-60 Black Hawk helicopter, but the system was inadequate to protect the helicopter while the helicopter was hovering. Approximately 60 helicopters were produced with the Cruise Suppression System, but when the Army determined the Cruise Suppression System was inadequate, helicopter production was continued without a suppression system. From 1981 through 1984, when the Hover Infrared Suppression System was being developed, about 749 helicopters were produced without suppression systems. In 1985, installation of the Hover Infrared Suppression System was incorporated into the helicopter's production line. Additionally, the Army initiated action to retrofit the helicopters that were produced without the Hover Infrared Suppression System. The Army planned to begin the retrofit program in 1987, but funding was reallocated to a higher priority safety related modification, and the retrofit program was delayed until 1991. We concluded that the funding constraints that delayed the retrofit program were legitimate, and that the proper priority was assigned to the retrofit program to ensure expedient completion.

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APPENDIX B: SUMMARY OF CONTRACTING ACTIONS

<u>Contractor</u>	<u>Contract No</u>	<u>Contract Date</u>	<u>Quantity of Kits</u>	<u>Contract Cost</u>
Sikorsky	DAAJ09-85-C-A006 Modification 6	05/06/85	78	\$ 7,027,176
	DAAJ09-88-C-0003 Modification 19	09/14/88	72	<u>6,486,624</u>
	Subtotal		150	<u>\$13,513,800</u>
General Electric	DAAJ09-88-C-0001 Delivery order 82	08/19/88	84	\$ 4,536,000
	DAAJ09-88-C-1475 Modification 5 Modification 6	10/05/88 03/31/89 05/15/89	72 72 11	3,896,568 4,032,000 594,693
	DAAJ09-90-D-0041 Delivery order 1 Delivery order 3 Delivery order 4	07/24/90 08/21/90 01/04/91	152 148 263	8,285,946 8,067,874 <u>14,467,814</u>
	Subtotal		802	<u>\$43,880,895</u>
	Total		<u>952</u>	<u>\$57,394,695</u>

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APPENDIX C: ANALYSIS OF COMPETITIVE SAVINGS

RECONSTRUCTED LOST SAVINGS

	<u>Core Kits</u>	<u>Actual Total Contract Cost</u>
Sikorsky	150	\$13,513,800
General Electric	802	<u>43,880,895</u>
	<u>952</u>	<u>\$57,394,695</u>
Competitive costs ^{1/}		(39,065,796)
Lost Savings		<u>\$18,328,899</u>

COMPUTATION OF FUTURE SAVINGS

<u>Core Kits^{2/}</u>	<u>Sole Source Unit Cost^{3/}</u>	<u>Sole Source Total Cost</u>	<u>Competitive Unit Cost^{4/}</u>	<u>Competitive Total Cost</u>	<u>Total Future Savings</u>
507 ^{5/}	\$59,000	\$29,913,000	\$44,250	\$22,434,750	\$ 7,478,250

1/ Competitive costs calculated using estimated breakout unit cost of \$54,714 discounted by 25 percent to reflect competitive savings.

2/ Includes 50 spares.

3/ Unit cost of last contract for comparable quantities was \$59,000.

4/ Unit cost calculated using 25-percent competitive savings estimate.

5/ To approved level of 1,443 helicopters.

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**APPENDIX D: SUMMARY OF POTENTIAL MONETARY AND OTHER BENEFITS
RESULTING FROM AUDIT**

<u>Recommendation Reference</u>	<u>Description of Benefit</u>	<u>Amount and/or Type of Benefit</u>
1.	Economy and Efficiency. Reduced contracting costs for the Hover Infrared Suppression System core kits.	\$7.5 million. Funds put to better use.
2.	Compliance with existing DoD Directives. Reduced contracting costs resulting from an increased level of full and open competition.	Nonmonetary.

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APPENDIX E: REPORT DISTRIBUTION

Office of the Secretary of Defense

Under Secretary of Defense for Acquisition
Assistant Secretary of Defense (Public Affairs)
Comptroller of the Department of Defense

Department of the Army

Secretary of the Army
Assistant Secretary of the Army (Financial Management)
Assistant Secretary of the Army (Research, Development and Acquisition)
Deputy Chief of Staff for Research, Development and Acquisition
Deputy Chief of Staff for Logistics
Commander, U.S. Army Materiel Command

Defense Agencies

Director, Defense Contract Audit Agency
Director, Defense Logistics Agency
Director, Defense Logistics Studies Information Exchange

Non-DoD Activities

Office of Management and Budget

U.S. General Accounting Office, NSIAD Technical Information Center

Congressional Committees:

Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Governmental Affairs
Senate Ranking Minority Member, Committee on Armed Services
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Ranking Minority Member, Committee on Appropriations
House Committee on Armed Services
House Committee on Government Operations
House Subcommittee on Legislation and National Security,
Committee on Government Operations

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PART IV - MANAGEMENT COMMENTS

Under Secretary of Defense for Acquisition Comments

Department of the Army Comments Including Aviation Systems
Command Supplement

Assistant Inspector General for Auditing, DoD, Response to Army
Aviation Systems Command Comments

Management Comments from the Director of Defense Procurement

Final Report Reference



OFFICE OF THE UNDER SECRETARY OF DEFENSE

WASHINGTON, DC 20301-3000

JUL 09 1991

DP/DSPS

MEMORANDUM FOR DEPARTMENT OF DEFENSE INSPECTOR GENERAL

SUBJECT: Draft DoDIG Report on the Audit of the Hotline Allegations for the Hover Infrared Suppression System for the UH-60 Black Hawk Helicopter

As requested, we have reviewed the draft report. Our comments are keyed to the report's two recommendations for corrective action.

Draft IG Recommendation 1. The Commander, Army Aviation Systems Command should develop a competitive technical data package and use full and open competition for the remaining procurements of the Hover Infrared Suppression System core kits.

Comments:

a. We reserve judgment on this conclusion, in the absence of the Army's position on both the recommendation and the underlying facts described in the report. It is clear from the discussion on report pages 13-14 that the Army, when preparing its 1989 and 1990 justifications for other than full and open competition, did not consider that it had all the data necessary to develop a Technical Data Package (TDP). The DoDIG auditors believe the Army did have all needed data. The availability (or nonavailability) of data to construct an adequate TDP should be a demonstrable fact, and not a matter of opinion. Only if this fact is established is there any point in considering whether it makes sense to use the TDP to conduct a competition, given the quantity remaining to be procured, predictable tooling costs for a source other than the incumbent, and so on.

b. The report provides no explanation (in the last sentence on page 11) for why the Black Hawk Project Management Office never acted on the recommendation to competitively acquire the subsystems. If there is no reason documented in the record, and no other indication of the Project Management Office's use of the cost benefit study, then these facts should be stated.

c. The report does not mention the time needed for the Army to develop the Technical Data Package (assuming all needed

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Management Comments from the Director of Defense Procurement

data is in hand) and conduct the competitive procurement. Can the Army realistically postpone ordering any more of the remaining core kits required until the competitive procurement is completed? If not, the recommended action and associated savings estimate should be changed to reflect the number of core kits actually susceptible to competitive procurement.

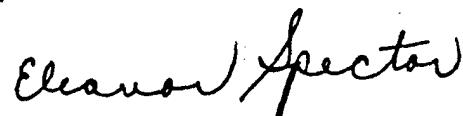
d. The Appendix C rationale for the savings estimates should be supported by identification of the source of the estimated breakout unit cost, and reasons why the 25 percent discount factor is appropriate in this case.

Draft IG Recommendation 2. The Commander, Army Aviation Systems Command should initiate periodic sole source procurement reviews to ensure the Competition in Contracting Act (CICA) is properly implemented.

Comments:

a. Initiating periodic reviews would be fully responsive to this recommendation, but may be ineffective in achieving the real goal. Rather than specifying this method, it may be better to recommend the Army take management action to preclude the inappropriate use of other than full and open competition in the future. This would help ensure that the Army focuses on the actual problem when it documents actions taken in response to this recommendation. (For example, corrections of the approval process itself may be more effective than after-the-fact reviews that highlight inappropriate decisions, but do not preclude them.)

b. The first sentence of the draft recommendation should refer to reviews of procurements using other than full and open competition rather than "sole source procurements" only, given that one of the audit objectives was to evaluate the adequacy of compliance with CICA. A competition unjustifiably limited to two sources would be a violation of CICA, yet this recommendation would not require such procurements to be reviewed.



Eleanor R. Spector
Director, Defense Procurement

Management Comments from the Department of the Army



MEMO TO
ATTENTION OF

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, DC 20310-0103



12 JUL 1991

SARD-SA

MEMORANDUM FOR INSPECTOR GENERAL, DEPARTMENT OF DEFENSE (AUDITING)

SUBJECT: Draft Report on the Audit of Hotline Allegations
for the Hover Infrared Suppression System for the UH-60
Black Hawk Helicopter (Project No. OAL-0083)

1. Reference Draft DODIG Report, 8 May 1991, subject as above, attached.
2. In accordance with DOD Directive 7650.3 the following is the Army's response to referenced report:

Recommendation 1: Nonconcur with the recommendation that the Commander, Army Aviation Systems Command develop a competitive technical data package and use full and open competition for the remaining procurements of the Hover Infrared Suppression System (HIRSS) core kits. All technical data is not available and, even if it were, full and open competition would not be cost effective given the remaining quantities, tooling costs, and production delays involved. Additional justification for nonconcurrence and revised monetary benefits are attached.

Recommendation 2: Nonconcur with the recommendation that periodic sole source procurement reviews be initiated to ensure that provisions of the Competition in Contracting Act of 1984 and DOD Directive 4245.9 "Competitive Acquisition," are being implemented. The review processes set forth in DOD Supplement 6 to Federal Acquisition Regulations (FAR) and FAR Part 6 are already in place within the Aviation Systems Command. In addition, the Office of the Competition Advocate reviews/approves all acquisitions greater than \$100,000 solicited on a less than full and open competition basis, and reviews all non spare/repair part requirements certifications prior to release to the contracting officer. Finally, a procedure is in place under which the Competition Advocate reviews a random sampling of all open contract files to ensure full compliance with the Competition in Contracting Act.

Management Comments from the Department of the Army

3. Point of contact for this office is Mr. Dale Hanson,
SARD-SA, DSN 224-7904.

Encl

Richard D. Beltson
RICHARD D. BELTS
Major General, GS
Deputy for Systems Management

CC: SAIG-PA

COMMAND COMMENTS
DODIG DRAFT REPORT
AUDIT OF THE HOTLINE ALLEGATIONS FOR THE HOVER INFRARED
SUPPRESSION SYSTEM FOR THE UH-60 BLACK HAWK HELICOPTER
(AMC NO. D9047) (AVSCOM NO. 04-0990-375)

Finding and Recommendations--Noncompetitive Acquisition of
Suppression Core Kits.

Finding

The Hover Infrared Suppression system's core kits were not competitively procured, as prescribed by the Competition in Contracting Act of 1984 and DOD Directive 4245.9 "Competitive Acquisition," August 17, 1984. This occurred because the Army did not take timely action to develop a competitive technical data package. As a result, the Army has lost the opportunity to realize about \$18.3 million in savings and could lose about \$19.4 million in savings on the remaining suppression system core kits needed for the balance of the Black Hawk helicopter fleet.

Additional Facts

1. The Hover Infrared Suppression System (HIRSS), including the core kit questioned in the draft audit report, was incorporated into the UH-60 by Engineering Change Proposal (ECP) action. The requirement was incorporated into the production contract in 1985 as a modification under the Changes clause, calling for the production aircraft to be delivered with the HIRSS installed. Other than identification under the ECP, the HIRSS was not cited as a separate deliverable, but was rather an integral part of the end item deliverable. In this environment, specific application of DOD Directive 4245.9, Competitive Acquisition, to the HIRSS is not appropriate. The guidance and prescription contained in that directive apply to the acquisition of major systems/end items, not to components of systems. Since the HIRSS was not a discrete acquisition during FY85-87, direct application of DOD Directive 4245.9 was not appropriate. Application of DFARS 217.7202, Component Breakout, was. Under the criteria established therein for decisions on component breakout, the HIRSS was appropriately not considered for breakout until the Program Manager was reasonably certain that the configuration had stabilized, delivery of the component to the UH-60 production line would not impact delivery of the UH-60, and the monetary benefit to the Government would offset the cost of additional contract solicitation, award, and administration, as well as the risks transferred to the Government from the prime contractor by virtue of the breakout action. Once the criteria of DFARS 217.7202-4 were met, the determination was made to breakout the HIRSS from Sikorsky to General Electric, the actual manufacturer, which occurred in 1988.

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Reference

2. The Government seldom, if ever, allows initial component breakout to other than the original equipment manufacturer (OEM) because of the risks involved to end item delivery. It is therefore unlikely that any component breakout to other than GE in the FY88 timeframe could have occurred. Even if a technical data package were prepared immediately upon award, normal solicitation leadtime of 11-13 months would have precluded a competitive award until at least August 89. It is therefore inappropriate to charge AVSCOM with lost savings during the period of FY84 through FY89. The contract costs incurred during that timeframe (\$26,573,061) should be deleted from the computation base of the DODIG report, and the timeframe itself should not be included in the findings. Lack of competitive acquisition becomes an issue only after the transition to the OEM had been successfully completed.

3. The Army has always considered the HIRSS a complex item and not an item that could be competed unless the entire core could be competed. The tolerances on the 12 components that make up the HIRSS core must be exact to fit together and meet the required system tolerance. This is critical to prevent a significant loss in engine power while reducing the hot exhaust to the desired temperature. A level III drawing package was procured and utilized for engineering analysis and logistic support requirements but was not considered suitable for a competitive procurement package. The PM and AVSCOM performed an analysis prior to each contract effort, including those associated with the Sep 89 and May 90 justification statement, and a decision was made each time that data that would result in a successful competitive procurement was not available. In fact, the drawings had been provided to Hayes Targets for review and in their letter of 12 Jan 90 (in which they state that fabrication of the HIRSS is well within their capability) they indicate that the data provided was not adequate enough to manufacture the part. Since the May 90 justification statement, all of the parts drawings have been made available. However, tooling and test fixture drawings have never been available.

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4. On page 14 of the DODIG report, the statement is made that there were no special processes pertaining to the General Electric fabrication of the HIRSS core. The fact is there are special vendor processes that are required in the manufacture of some of the components. The fabrication of the components is complex but could be done by other contractors if they had access to the same vendors. The requirement to utilize the same vendors as General Electric is one of the factors that reduces the potential savings that could be achieved through competition.

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5. On page 9 of their report, the DODIG states that the Army

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received responses from seven contractors interested in competing for the fabrication of the core kits. It should be noted that there are always contractors that show an interest in every procurement effort until they fully understand the requirement, just as 6 of the 7 contractors did in this case.

6. The DODIG report assumes the HIRSS core kit could be procured under full and open competition without further testing. This is not necessarily the case, but the DODIG report makes no mention of this issue or the associated costs to the Government.

7. The DODIG report gives no consideration to the requirement, cost, or lead time for specialized tooling or to the cost and mission impacts of a delay in production of the HIRSS. These are important considerations in any analysis of the feasibility of "full and open" competition for the HIRSS. In order for any other source to become approved, a new set of tooling will have to be developed, since the current tooling will stay at GE to maintain the current contract. The estimated cost to procure the tooling is \$6,000,000, which would reduce any potential savings that could be gained through "full and open" competition. The production delay is estimated to be 2-3 years.

8. The cost analysis report referenced by the DODIG report was done to compare the potential savings if reductions in the unit cost could be achieved through competition. The cost analysis presented five hypothetical scenarios to show the break-even points for each consideration. The cost analysis was not intended to project or estimate expected cost savings. The scenario was not based on any contractor proposals and no effort was made to validate any unit cost reductions. In the opinion of the cost analysts that performed the study, the potential for a 25 percent savings was highly optimistic based on the circumstances.

Pages 19
and 21

9. There are a number of things wrong with DODIG's calculations of lost and future savings on pages 23 and 25 of their report:

-The DODIG uses a 25 percent factor to calculate lost and potential savings. This is unrealistic and inappropriate. The 25 percent factor is applicable to breakout from a prime contractor to the actual manufacturer, which we already did at a substantial savings (approximately \$35,000 per item). Any further savings through competition could at best be expected to be at a rate of 15 percent of the actual manufacturer's price. It must be understood that the material savings achieved by General Electric due to buying their HIRSS material requirements

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in bulk quantities with their other material requirements would partially offset the potential lower labor rates from a smaller vendor. Also, some of the components require special processes that are only available from certain vendors who would charge a new source the same if not higher prices than General Electric is currently paying.

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-On page 23, the quantity of 72 and the \$6,486,624 cost figure included in the total quantity and cost of the systems procured are incorrect. That quantity and cost were deductions from the contract indicated and should not have been included in the totals. The totals on page 23 should be 880 and \$50,908,071.

-The report uses the unit cost of \$54,714 to calculate the lost savings but changes that cost to \$59,000 to calculate the future savings. The highest price ever paid for the HIRSS subsequent to breakout was \$56,000. A price of \$59,000 doesn't come into the picture until 1993 as outlined in DAAJ09-90-D-0041.

-The report calculates future savings associated with a program acquisition quantity of 2253 UH-60 helicopters. This is inappropriate, since the total UH-60 production quantity is 1443 and is not projected to be approved at any higher level.

Correcting the DODIG's calculations based on the above would reflect lost and future savings estimates of \$9,981,999 and \$4,258,800 respectively. The lost savings figure still would be inappropriate since, as explained in Additional Facts paragraphs 1 and 2 above, it would not have been possible or feasible to award a competitive contract at least until Aug 89. And the future potential savings would have to be offset by other considerations such as production delays and tooling costs. As shown in Exhibit 1 (attached), considering tooling costs alone would result in a net loss to the Government.

10. On page 1 of their report, the DODIG mentions that the Army determined that the Cruise Suppression system did not function effectively when the helicopter was hovering. This statement can be misleading. The Cruise Suppressor was designed to operate at speeds greater than 80 knots because that was the requirement at the time of design. Subsequent to the initial design the mission requirement for the UH-60 was changed to include "nap of earth" flying and a need for low speed and hover protection was established which resulted in the new designed HIRSS.

Management Comments from the Department of the Army

Recommendation 1.

We recommend that the Commander, U.S. Army Aviation Systems Command, develop a competitive technical data package and use full and open competition for the remaining procurements of the Hover Infrared Suppression system core kits.

Action Taken.

Nonconcur based on the additional facts above. All the necessary data still is not available and, even if it were, full and open competition would not be cost effective given the remaining quantities, tooling costs, and production delays involved. Any savings lost or potential are significantly less than calculated by the DODIG and would be offset by the other considerations.

Recommendation 2.

We recommend that the Commander, U.S. Army Aviation Systems Command, initiate periodic sole source procurement reviews to ensure that the provisions of the Competition in Contracting Act of 1984 and DOD Directive 4245.9 "Competitive Acquisition," are being implemented to preclude recurrence of the inappropriate use of other than full and open competitive procurement practices in the future.

Action Taken.

Nonconcur since the additional facts above prove there was no problem and AVSCOM already has review processes established. The review processes set forth in DFARS Supplement 6 and FAR Part 6 are in place. The CASMO reviews/approves all acquisitions greater than \$100,000 which are solicited on a less than full and open competition basis. In addition, all technical and requirements certifications for other than spare and repair parts are previously coordinated on by the Competition Advocate prior to being forwarded to the contracting officer. Finally, a procedure is in place under which a random sampling of all open contract files is done by CASMO on a monthly basis to ensure full compliance with the requirements of the Competition in Contracting Act.

Monetary Benefits For Recommendation 1.

We nonconcur with the estimated potential monetary benefits of \$19.4 million because we have nonconcurred with the recommendation. As indicated above, we do not believe it would be cost effective to implement the recommendation. DODIG's calculation of potential future savings should have only been \$4,258,800 and that would have to be offset by tooling costs estimated at \$6,000,000 and production delays.

Management Comments from the Department of the Army

Computation of Future Savings

Core Kits	Sole Source Unit Cost	Sole Source Total Cost	Competitive Unit Cost 1/	Competitive Total Cost	Total Future Savings
507	\$56,000.00	\$28,392,000.00	\$47,600.00	\$24,133,200.00	\$4,258,800.00
Minus Estimated Tooling Costs					(16,000,000.00)
			Net Loss .		(1,741,200.00)

1/ Unit cost calculated using 15% competitive savings estimate.

Assistant Inspector General for Auditing, DoD, Response to Army Aviation Systems Command Comments

The Army Aviation Systems Command (Command) comments were attached to the Secretary of the Army (Research, Development, and Acquisition) comments and were used to synthesize the Army response to the draft report. The Command's comments focused on attempts to justify the propriety of the sole source acquisition strategy for the Hover Infrared Suppression System core kits to the General Electric Aircraft Engine Company. The Command's comments, except the comments regarding our computation base for future projected savings, are without merit and not supported by the evidence we obtained during our audit. We remain convinced that the Army violated the intent and spirit of the Competition in Contracting Act of 1984, and the opportunity still exists for the Army to establish competition for the Hover Infrared Suppression System core kits in a cost-effective manner. This response focuses on the 10 "Additional Facts" presented in the Command's comments and provides supplemental information for each issue. The complete text of the Army Aviation Systems Command comments are a part of the overall Army response on pages 31-38 of the report.

Applicability of the Competition in Contracting Act of 1984. The Command asserted that the Hover Infrared Suppression System core kits were not subject to the provisions of DoD Directive 4245.9 "Competitive Acquisition," August 17, 1984 because the core kits were not a discrete acquisition. The Command further stated that the core kit acquisitions were a component breakout issue subject to the provisions of Defense Federal Acquisition Regulation Supplement 217.7202 and that the Army decision to break out the Hover Infrared Suppression System core kits from Sikorsky to General Electric was consistent with the component breakout guidance.

Audit response. DoD Directive 4245.9 "Competitive Acquisition," is applicable to the acquisition of all goods and services within DoD. The Competition in Contracting Act of 1984, as implemented by DoD Directive 4245.9, was enacted to promote full and open competition. The Army's assertion that DoD Directive 4245.9 applies to ". . .the acquisition of major systems/end items, not to components of systems" is not accurate. The Directive specifically assigns the following responsibilities with the Secretaries of Military Departments.

- o Encourage competition to the maximum extent practicable through appropriate policies and procedures in their respective DoD Component.
- o Inform all commanders of their responsibility for obtaining competition when practicable, recognizing that DoD

Components other than those with a contracting function are frequently responsible for actions that inhibit competitive procurement.

- o Establish realistic but challenging goals for increased levels of competition and monitor achievement of these goals.
- o Establish procedures for the senior procurement executive of the DoD Component, or a designee of the senior procurement executive, to review any decisions made within that DoD Component that will result in production units of a major system being acquired without competition at either the prime or major component subcontractor level.

The core kit procurements were subject to the provisions of DoD Directive 4245.9. The application of the component breakout procedures in Defense Federal Acquisition Regulation Supplement 217.7202 was not mutually exclusive with establishing competitive acquisition strategies or adhering to the requirements specified in DoD Directive 4245.9. The core kits were discretely identified items of the Hover Infrared Suppression System. Engineering Change Proposal No. 235 was for the "removable provisions" of the Hover Infrared Suppression System, or the components not integral to the airframe. The removable provisions consisted of the suppression system core and ancillary hardware that made up the core kit. The core kits were identified and procured. The core kits contracts are identified in Appendix B of the report.

We remain convinced that the core kits could have been competitively procured. The Army Aviation Systems Command Competition Advocate's Office had sufficient information available that should have caused reasonable doubt and resulted in a challenge to the propriety of the repeated sole source awards for the core kits. Also, the Competition Advocate should have objected to the use of long term sole source multiyear contracts with quantities beyond the minimum production requirements needed to plan and accomplish competitive acquisition.

Appropriateness of savings calculations. The Command claimed that its initial component breakout to the original equipment manufacturer was proper, and the \$26,573,061 contract costs associated with the initial breakout should not have been identified in the report as lost savings. The Command said the Government seldom, if ever, allows initial component breakout to other than the original equipment manufacturer because of the risks involved to end item delivery.

Audit response. We still believe that our basis for computing the lost opportunity savings was accurate. The facts supported our conclusion that the core kits could have been competed and the savings could have been realized. The argument that the risk of helicopter production delay warranted sole source procurement is not supportable. The Army has already accepted 749 of the approximately 1,100 Black Hawk helicopters in the Army inventory without Hover Infrared Suppression Systems installed. The helicopters not having the Hover Infrared Suppression System are being retrofitted in the field from core kits being delivered from the current sole source contract. The availability of core kits to the prime contractor has not adversely affected production in the past and would not adversely affect production in the future. Even if it did, the same risks would be present to the Government regardless of whether General Electric or another contractor furnished the core kits to the prime contractor. The core kits were an ideal candidate for competitive procurement because the kits were not integral to the production process, there was no incremental risk to the Government, and the kit fabrication process was straightforward. Accordingly, we request that the Command reevaluate its position in response to the final report.

Complexity of the core and lack of technical data. The Command considered the Hover Infrared Suppression System as a complex item that could not be competed unless the technical data package was available, the tooling and test fixture drawings were available, and the core could be competed as a unit. Analyses concluded in September 1989 and May 1990 that the technical data was not available. The Army also stated that Hayes reviewed the technical data and indicated that the data provided were not adequate to manufacture the part.

Audit response. The Army repeatedly claimed that the missing drawings were the principal constraint on competition, but it had not followed through to obtain the missing drawings and develop a technical data package suitable for competition. The Army's assessment that the core kit was complex was subjective. The kit has no moving parts and is made of 12 sheetmetal components that are riveted, welded, formed, and assembled. In a September 6, 1989, memorandum, an engineer in the Competition Advocate and Spares Management Office indicated that "We can have a Technical Data Package [TDP] two weeks after receiving the . . . data and can place the TDP in the hands of the potential sources. The Project Manager's [PM] Justification and Approval lists seven sources that responded to a market survey but were turned off when PM told them there was no TDP." The Army also had the opportunity to have General Electric develop the technical data package, but again it took no action.

The Army's reference to Hayes' evaluation of the drawings that ". . .the data provided was not adequate enough to manufacture the part." is not supported by the documents we obtained. In the January 1990 letter to the Competition Advocate and Spares Management Office, Hayes did request that the Army provide supplemental information because the Army did not provide the complete technical drawing package. Hayes stated that it was still interested and capable of manufacturing the core kits. During our review, the Project Management and Competition Advocate Offices maintained that the core kits could not be competed because the technical drawings were not available. In March 1991, the Competition Advocate's Office claimed that the drawings were still incomplete. Yet, immediately after discussions with the Competition Advocate, we were able to obtain the complete technical drawing package from the Army Aviation System Command records repository. Of the 61 drawings in the package, we learned that 58 had been on hand since 1988.

We could not determine why Hayes was not provided with a complete technical drawing package. The information needed to develop the package was available to the Army at the time of the Hayes request. However, it appears that the Army deemphasized the priority of developing a competitive technical data package in order to defer establishing full and open competition for the Hover Infrared Suppression System core kits. Documents from a July 1988 Status Review between the Black Hawk Project Management Office and General Electric stated that the Army's support for future sole source justification of the core kits with General Electric was "ongoing."

Special processes. Command stated that there are special vendor processes that are required in the manufacture of some of the components. The requirement to use the same vendors as General Electric is one of the factors that reduces the potential savings that could be achieved through competition.

Audit response. There is no factual support for the Army's assertion that General Electric possesses unique skills and capabilities necessary to fabricate Hover Infrared Suppression System core kits. General Electric stated to us during our February 1991 visit that there were no special processes involved in fabricating the kits, and it knew of no reason that the core kits could not be competed. General Electric had no experience in manufacturing suppression systems before the Hover Infrared Suppression System, while other manufacturers existed with extensive experience and expertise in designing and manufacturing comparable suppression systems. One such contractor actually manufactured a comparable infrared suppression system for the UH-60 Black Hawk that was rejected in favor of the Hover Infrared Suppression System.

General Electric fabricated 5 of the 12 parts in the core kit and purchased the other 7 parts. The 5 parts manufactured by General Electric represented 98 percent of the kit's cost. The Army's contention that vendor dependency is an issue or use of the same vendors by other contractors could reduce the potential savings achieved through competition is speculative. The Army has not solicited or received any estimates from potential competitors because it did not provide the interested contractors with the drawings to prepare proposals. We do not believe that the Army will be able to accurately project the actual achievable savings unless it decides to open the core kits to competition.

Contractor responsiveness. The Command stated that it received responses from seven contractors interested in competing for the fabrication of the core kits. It should be noted that there are always contractors that show an interest in every procurement effort until they fully understand the requirement, just as six of the seven contractors did in this case.

Audit response. The implication that only Hayes was capable of meeting the core kit production requirement has no basis. There were seven contractors that expressed interest in fabricating the core kits. However, the Army did not supply any technical information to enable prospective contractors to submit estimates. The other six contractors were simply not as persistent as Hayes. It is not logical to expect a contractor to incur expenses to prepare cost estimates without the necessary technical data. Two of the other six contractors responded to the market survey and they indicated that they would submit a proposal when the technical data package was made available. We initiated followon discussions with Hayes in July 1991 to verify the accuracy and completeness of our information and we learned that the Army did request Hayes to prepare cost estimates after we issued the draft report.

Contractor testing. The Command stated that our report assumes the core kits could be procured under full and open competition without further testing. This is not necessarily the case, but the report made no mention of this issue or the associated costs to the Government.

Audit response. We noted that the design of the Hover Infrared Suppression System was stable and mature, and the system's reliability far exceeded the requirements. Further, we recognized that the core kits would be fabricated to the existing specifications regardless of who produces them. Accordingly, we would expect the Army to incorporate any necessary production related test requirements into future contracts consistent with prudent management practice.

Costs and lead times associated with production. The Command stated that the report did not consider the costs or lead times for specialized tooling and the resultant production delays that would accompany full and open competition for the core kits. In order for any other source to become approved, a new set of tooling would be required, since the current tooling would remain at General Electric to complete the current contract. The estimated cost of the tooling is \$6 million, which would reduce any savings realized from full and open competition. The production delay is estimated to be 2 to 3 years.

Audit response. We evaluated the potential for additional cost, lead times, and potential delays that could accompany full and open competition. The Army has had 6 years to plan for a competitive acquisition of the Hover Infrared Suppression System core kits. It had not taken the first step until we pointed out that we had obtained a complete technical drawing package from their own records repository. At that time, other obstacles were introduced that purportedly precluded full and open competition. We believe these barriers could be eliminated if the Command took positive steps to establish competition of the core kits.

The Army tooling costs for General Electric were about \$4.1 million to produce core kits at a rate of 30 kits per month. The Command's reference to the \$6 million tooling cost was incorrect. In July 1991, Hayes estimated its tooling costs could be as low as half of the General Electric tooling costs.

Production delays would not occur as a result of competing the core kits. The core kit is field installable, and would not adversely affect production acceptance of the helicopter airframe. The production schedule for the Black Hawk helicopter is 6 airframes per month. As of July 1991, General Electric was delivering 30 core kits per month. Further, the core kit procurements pending award for which we have calculated the potential savings in the report have required delivery dates beginning in FY 1994.

Validity of the cost analysis report. The Command stated that the November 1989 cost-benefit study that the Army Aviation Systems Command Directorate for Systems and Cost Analysis conducted was not intended to project or estimate expected cost savings. The study was intended to compare potential savings if reductions in the unit cost could be achieved through competition. The cost analysis presented five hypothetical scenarios to show the points for each consideration. The scenarios were not based on any contractor proposals and no effort was made to validate any unit cost reductions. In the opinion of the cost analysts that performed the study, the

potential for a 25-percent savings was highly optimistic based on the circumstances.

Audit response. The November 1989 cost benefit study was valid, and the conclusion to establish full and open competition for the core kits was, and still remains appropriate. The purpose of the study was to compare "... the costs of continuing to procure the Hover Infrared Suppression System (HIRSS) core from General Electric (GE, sole source) to the costs of procuring the HIRSS core from an alternative source. The alternative procurement consideration is for 'full and open,' competitive acquisition." According to the study, "...this follow-up competitive analysis has been conducted and concludes that significant cost savings may be realized from breakout of the HIRSS. Therefore, recommendations are to consider 'full and open' competition of the HIRSS core." The recommendation was clear, concise, and unambiguous. The 25-percent savings projection is consistent with Defense Federal Acquisition Regulation Supplement No. 6 and savings experienced in other systems as a result of the Army implementing our recommendations to establish competition under similar circumstances. The savings projection represented the analysts' midrange estimate, and we remain convinced that it is realistic and achievable.

The Command's resistance to competition uses the argument that the end of the procurement program for helicopters will end the need for the core kits or the components in the core kits. The Black Hawk helicopter will be in the Army inventory well into the 21st century and will require spares support. If the Army does not establish a competitive procurement base while it is still cost-effective to do so, it will be compelled to rely solely on General Electric for replenishment spares support for the life of the fleet. We were unable to quantify the long term savings for replenishment spares that would accompany the introduction of competition, but we believe the savings would be significant.

Inaccuracies in the computation of lost and future savings. The Command stated there were a number of inaccuracies in the calculations of lost and future savings. The use of a 25-percent factor to calculate lost and potential savings was unrealistic and inappropriate. The 25-percent factor is applicable to breakout from a prime contractor to the actual manufacturer, which was already done at a \$35,000 per unit savings. Any further savings could at best be expected to be 15 percent of the actual manufacturer's price. Other considerations affecting the potential savings should include General Electric's ability to obtain better prices by combining the core kit material requirements with other material

requirements, which would offset potential lower labor rates from a smaller vendor. Also, some of the components require special processes that are only available from certain vendors who would charge a new source the same if not higher prices than General Electric is currently paying.

The quantity of 72 and the costs of \$6,486,624 are incorrect. The quantity and cost were deductions from the contract indicated and should not have been included in the totals. The totals on page 19 should be 880 and \$50,908,071.

The report uses the unit cost of \$54,714 to calculate the lost savings but changes that cost to \$59,000 to calculate the future savings. The highest price ever paid for the HIRSS [core kits] subsequent to breakout was \$56,000. A price of \$59,000 doesn't come into the picture until 1993 as outlined in DAAJ09-90-D-0041.

The report calculates future savings associated with a program acquisition quantity of 2,253 UH-60 helicopters. This is inappropriate, since the total UH-60 production quantity is 1,443 and is not projected to be approved at any higher level.

Correcting the calculations based on the above would reflect lost and future savings estimates of \$9,981,999 and \$4,258,800 respectively. The lost savings would still be inappropriate because, as explained earlier, it would not have been possible or feasible to award a competitive contract until August 1989. Also, the future savings would have to be offset by other considerations such as production delays and tooling costs. As shown in Exhibit 1 (page 38) consideration of the tooling costs alone would result in a net loss to the Government.

Audit response. Our calculations of lost and future savings were accurate, complete, and achievable. If the Army had established competition with the initial procurement, it would have saved \$18.3 million. The Army's action to break the core kits away from the prime contractor resulted in a per unit cost reduction of \$35,000. However, the reduction was the result of eliminating the prime contractors' overhead and profit and did not cause any price reductions from General Electric. If the Army competed the core kits at the earliest opportunity, the \$5.3 million (\$35,000 x 150 core kits) in excessive costs paid to the prime contractor would not have been incurred. The 25-percent savings potential is valid and achievable. However, if the 15-percent Army savings projection proved to be more accurate, it would still be cost-effective to establish competition for the core kits.

The quantities cited in Appendix B of the report were derived from the contracts and verified with Army Aviation Systems Command Procurement and Production and the Black

Hawk project management office. Although lots XIII, XIV, and XV were modified from contractor furnished material to Government furnished material, lot XII was not. The 72 kits we referenced were the lot XII kits. The quantities and costs are accurate as stated in the report.

The \$54,714 (\$43,880,895 ÷ 802 kits) historical unit cost was computed using the average cost the Army paid for the 802 core kits procured directly from General Electric. The \$54,714 unit cost was then discounted by 25 percent, as stated in the report, to arrive at the competitive unit cost projection of \$41,035.50. The \$39,065,796 competitive cost was computed by multiplying the 952 kits procured by the competitive unit cost projection. The savings is the difference between the actual incurred costs and the projected costs that would have been incurred if the kits had been procured competitively. The analysis of the reconstructed lost savings contained in Appendix B of the report is accurate as stated.

The future savings were computed using the future contract cost of \$59,000 because that will be the core kit cost (Appendix C). The savings were calculated at both the authorized acquisition quantity and the program acquisition quantity, but the monetary benefits claimed in the report should have been limited to the \$7,478,250. However, it is important to note that the savings do not consider the additional potential savings attributable to spares replenishment, and the requirements of the other Services.

We could not determine the tooling costs required by other contractors, and neither could the Army. We were told that the costs would most probably be about half of the \$4.1 million actual tooling costs incurred by the Army, which would result in a net savings of \$5.4 million. If the tooling costs equaled the General Electric tooling costs, the minimum net near term cost savings would be about \$3.4 million and competition would still be cost-effective.

Effectiveness of the Cruise Suppression System. The Command said that the statement ". . .the Cruise Suppression System did not function effectively when the helicopter was hovering" could be misleading. The requirement for low speed and hover protection was not a requirement when the Cruise Suppression System was designed. The mission requirement change that incorporated "nap of the earth" flying resulted in a new suppression system requirement.

Audit response. We used the May 22, 1990, Hover Infrared Suppression System Acquisition Plan as the authoritative source for information pertaining to the Cruise Suppression System. The plan stated "The Cruise Suppressor, which was

part of the original UH-60A configuration, operated only in forward flight and was heavy and cumbersome. Its inadequacies were recognized very early in production and the need for a new suppressor identified." The Cruise Suppression System required replacement because of its limited operational effectiveness. Surely, the principal deficiency of the Cruise Suppression System was its inability to adequately suppress the infrared signature of the helicopter unless the helicopter was traveling in excess of 80 knots. The deficiencies inherent in the Cruise Suppression System were significant and were not related to any new mission requirement.

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